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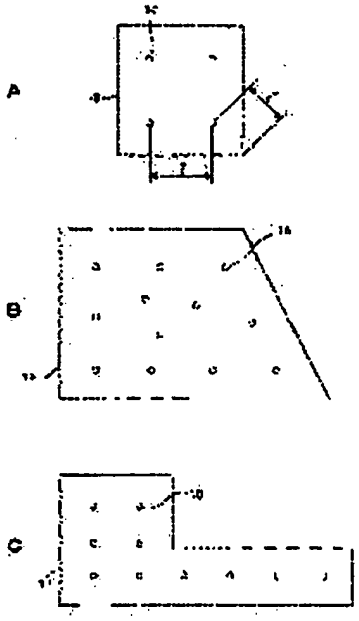
(54) PRODUCTION METHOD FOR HOLLOW STRUCTURE AND PRODUCTION METHOD FOR MEMS ELEMENT

(57)Abstract:
PROBLEM TO BE SOLVED: To optimize a pattern layout of gas introduction holes in an etching process for a sacrifice layer in the production of a MEMS element.
SOLUTION: A production method for hollow structure comprises the steps of forming a drive member on an upper surface of the sacrifice layer formed on a substrate and forming a plurality of the gas introduction holes in the drive member, feeding etching gas through the gas introduction holes 18 and selectively removing the sacrifice layer by etching to form a space between the substrate and the drive member. The plurality of the gas introduction holes 18 are formed over the whole area of the sacrifice layer, and at least mutual distances between the gas introduction holes 18 are equalized.



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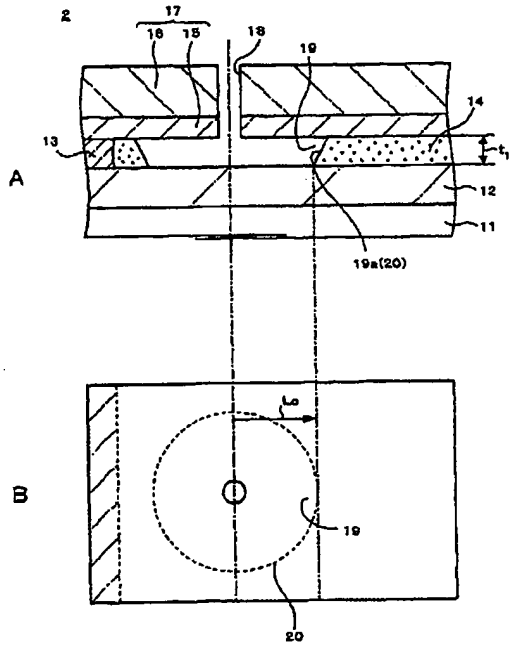
CLAIMS

[Claim(s)]
[Claim 1]
The process which forms two or more gas installation holes in the covering member formed so that the sacrifice layer on a substrate might be enclosed,
Etching gas is supplied through said gas installation hole, and it has the process which carries out etching removal only of said sacrifice layer alternatively, and forms a cavity between said substrates and said covering members,
While forming said two or more gas installation holes corresponding to the whole region of said sacrifice layer, it forms so that the gas installation hole with which a mutual distance of this gas installation hole becomes equal at least may exist all over the districts.
The manufacture approach of the hollow structure characterized by things.
[Claim 2]
The distance of the gas installation hole nearest to a sacrifice layer outside and this sacrifice layer outside is larger than twice, and the mutual minimum distance of said gas installation hole is carried out.
The manufacture approach of the hollow structure according to claim 1 characterized by things.
[Claim 3]
The silicon ingredient which contains a silicon ingredient or mixture in said sacrifice layer is used, and it is XeF2 to said etching gas. Gas is used.
The manufacture approach of the hollow structure according to claim 1 or 2 characterized by things.
[Claim 4]
The process which forms a driving member in the top face of the sacrifice layer formed on the substrate, and forms two or more gas installation holes in this driving member,
Etching gas is supplied through said gas installation hole, and it has the process which carries out etching removal only of said sacrifice layer alternatively, and forms space between said substrates and said driving members,
While forming said two or more gas installation holes corresponding to the whole region of said sacrifice layer, it forms so that the gas installation hole with which a mutual distance of this gas installation hole becomes equal at least may exist all over the districts.
The manufacture approach of the MEMS component characterized by things.
[Claim 5]
The distance of the gas installation hole nearest to a sacrifice layer outside and this sacrifice layer outside is larger than twice, and the mutual minimum distance of said gas installation hole is carried out.
The manufacture approach of the MEMS component according to claim 4 characterized by things.
[Claim 6]
The silicon ingredient which contains a silicon ingredient or mixture in said sacrifice layer is used, and it is XeF2 to said etching gas. Gas is used.
The manufacture approach of the MEMS component according to claim 4 or 5 characterized by things.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AN - 2005-199749 [21]

TI - Semiconductor device dicing method involves dividing silicon wafer, along groove formed at wafer by dry etching using reactive gases such as xenon fluoride and sulfur hexafluoride

AB - JP2005051007 NOVELTY - The grooves (4) are formed on a silicon wafer (1) by dry etching using reactive gases such as xenon fluoride and sulfur hexafluoride. The wafer in which semiconductor devices (2) are formed, is divided along the grooves formed at wafer to obtain semiconductor chips (5).
- USE - For dicing semiconductor device to obtain semiconductor chip e.g. micro electromechanical system (MEMS) chip.
- ADVANTAGE - The foreign material such as scraps are not adhered to the semiconductor device and the wafer is divided easily without reducing the number of semiconductor devices on the wafer.
- DESCRIPTION OF DRAWING(S) - The figure explains the semiconductor device dicing process.
- silicon wafer 1
- semiconductor device 2
- etching mask material 3
- groove 4
- semiconductor chip 5
- (Dwg.1/5)

IW - SEMICONDUCTOR DEVICE DICE METHOD DIVIDE SILICON WAFER GROOVE FORMING WAFER DRY ETCH REACT GAS XENON FLUORIDE SULPHUR

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